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# Poland’s energy challenges in the context of the war in Ukraine


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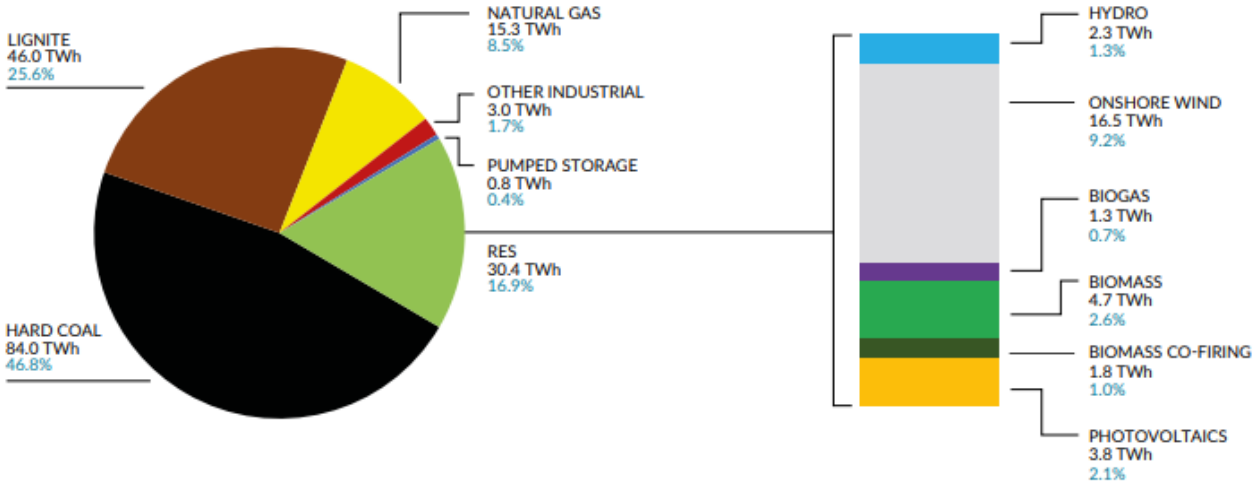
# Agenda

- Current energy situation. Energy production and capacity in the Polish energy system.
- Energy transition. Poland’s Energy Policy 2040 (currently being updated as a consequence of the war).
- Russian resources in Poland.
- Summary. Energy transformation challenges in the context of the war in Ukraine.

# Current energy situation. Energy production and capacity in the Polish energy system.

- **Share of coal** in electricity generation: 71% (from 87% in a decade).
- Despite **high $CO_2$ prices**, coal-fired generation is less expensive than natural gas-fired generation.
- Record 2021 in **electricity production** (179.4 TWh, +14% y/y) and consumption (180.3 TWh, +5.4% y/y) caused by fast-growing economy.
- **RES capacity** is growing (+4.4 GW y/y), photovoltaics (+3.7 GW y/y = +95% y/y), wind (only +5% y/y).
- **Share of RES** in energy mix: 16.9% (from 6.9% in a decade). Capacity grew from 6.1% to over 30% in 10 years (wind: 50% of RES).
- Carbon dioxide **emissions dropped by 17%** since 2010, however still very high for world standards.

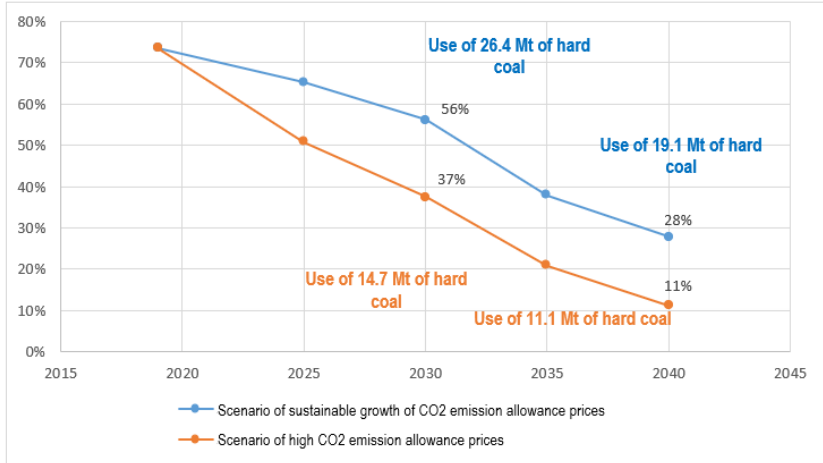



Poland's energy production 2021
Source: Forum Energii: Energy transition in Poland 2022

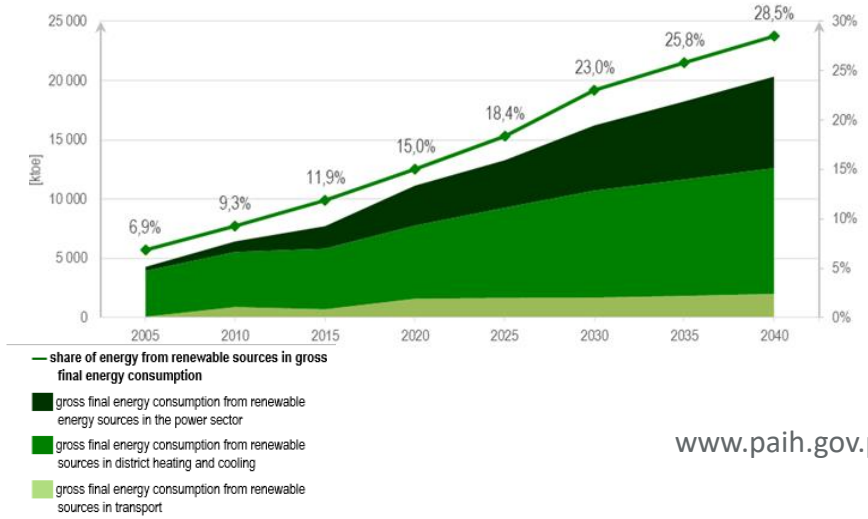
# Energy transition. Poland's Energy Policy 2040 (currently being updated as a consequence of the war)

- Optimal use of own resources
- Expansion of electricity generation and grid
- Diversification of supply
- Development of energy markets
- Nuclear power
- Development of RES
- Development of district heating and cogeneration
- Improvement of energy efficiency

Forecast of coal's share in electricity generation by 2040

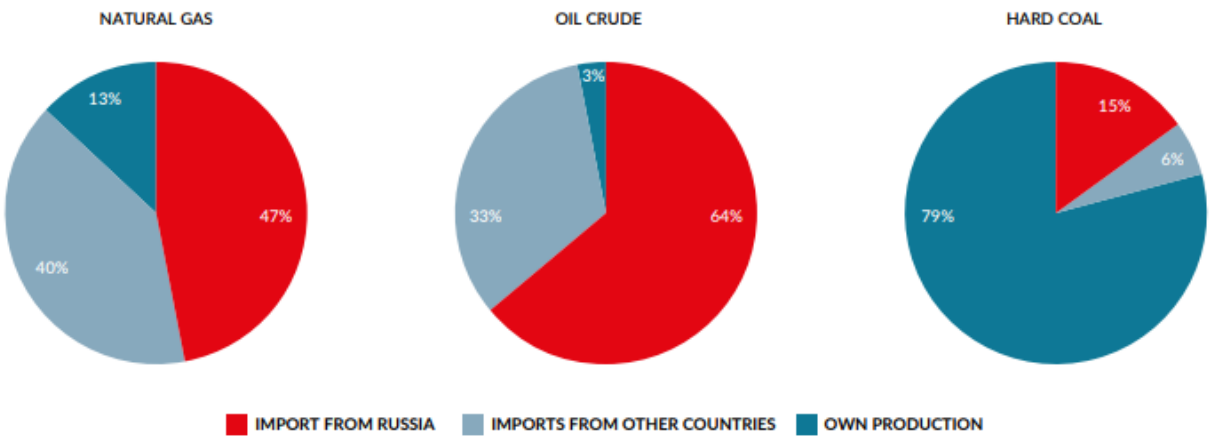



Renewable energy consumption forecast for 2020-2040



# Russian resources in Poland.

- **COAL**
  - Coal consumption: 63.5M tons (11 M tons steam coal import - 82% from Russia, i.e. 15% of total use)
- **GAS**
  - Gas imports (both pipeline and LNG): 17.4 bcm (55% from Russia)
  - Gas exports: 1.4 bcm (98% to Ukraine)
  - Gas production: 2.7 bcm (high methan gas and declining); 3.7 bcm nitrogen –rich)
- **OIL**
  - 64% imported from Russia




Import of resources in 2020
Source: Energy transition in Poland, Forum Energii, based on wnp.pl data

# Summary. Energy transformation challenges in the context of the war in Ukraine.

**Coal**
- Possible temporary production increase;
- Redirection of supply chains;
- Discussion on extending life-span of coal power stations;
- No new coal power plants.

**Gas**
- Independence from Russia by Baltic pipe, own production and reserves;
- Acceleration of gas terminals constructions and storage;
- Hydrogen blending
- Stabilizing role of gas until nuclear energy is available (new gas plants little probable).

**Oil**
- Developing new directions (Saudi Aramco and other middle east companies).

**RES**
- Initially war causes slowing down in decarbonization but in a longer-term high probability of acceleration of transition by using RES;
- RES becoming more price effective;
- Regulation update necessary;
- Update: 50% by 2040.

**Nuclear power**
- Acceleration of construction of the first power station;
- Small Modular Reactors.

**Energy storage**
- Role of batteries;
- Hydrogen.

**Energy efficiency improvement**
- Role of the construction sector and technology;
- Information and education.